



# CAATTS - Data Access and Use in Support of Audits

An Auditor's Experiences  
Review Services Branch,  
National Defence Headquarters

Presented to ...  
US Army Internal Review Services  
August 2003

By representatives from  
Review Services,  
Canadian  
Department of National Defence,  
(613) 995-8166



# Presentation Outline

## Background

- DND's Business Environment
- ERP Systems used in DND

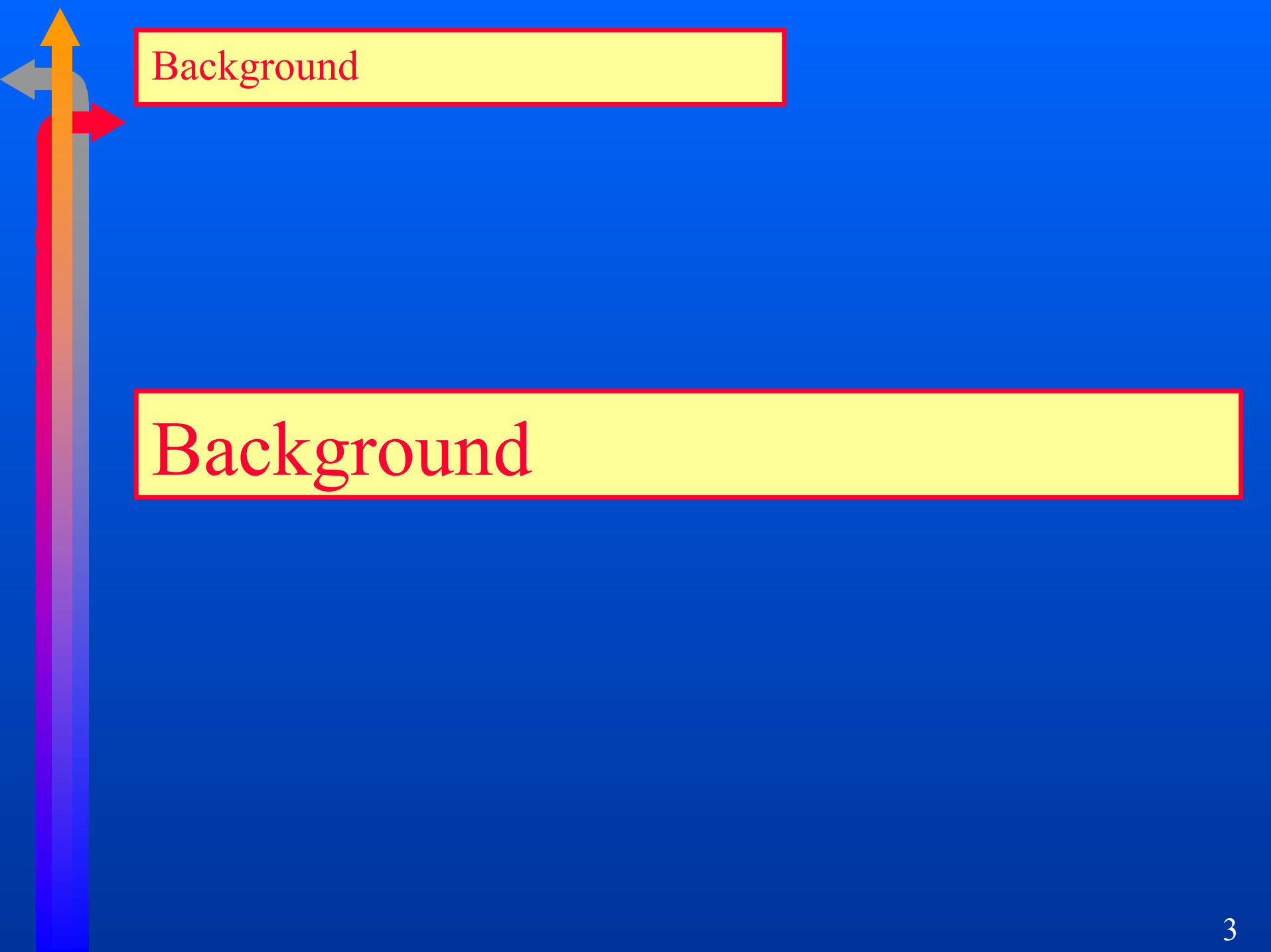
## Using ERP Data to Support Audit Projects:

- Uses for Data Analysis
- Data Access Methods - ERP Systems (SAP Examples)
- Data Analysis Techniques

## Data Analysis - Illustrations:

- Finding risk items    ~ Unknown symptoms  
                                     ~ Known symptoms
- Continuous Monitoring

## Conclusion

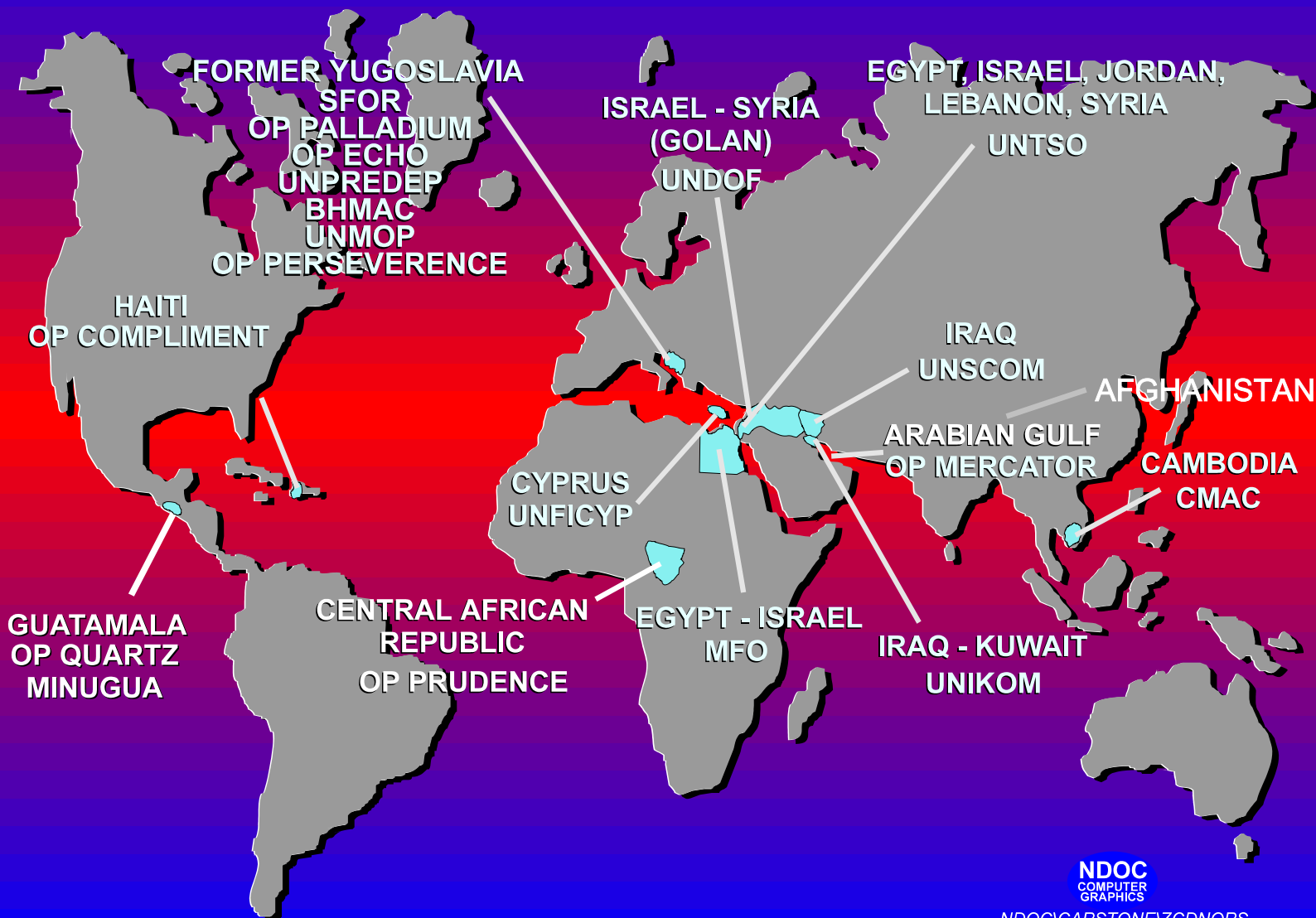


Background

Background

## Background

# CURRENT CANADIAN OPERATIONS



# Background

## Department of National Defence / Canadian Forces

\$12,200,000,000

60,000

30,000

19,000

- Bases
- Stations
- ▲ Other Loc



Military Operations



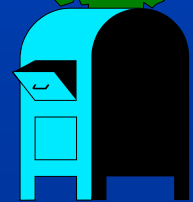
Medical/Dental



Legal/Judicial



Research



Mail



Maintenance



Police



Training & Education



Construction



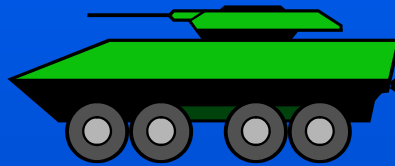
Natural Resources



Towns

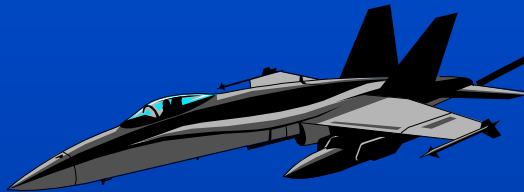
Background

## DND ERP Systems



FMAS

MASIS

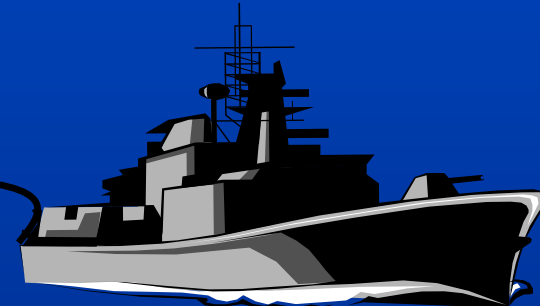


HRMS

CFSSU



Mincom



## Using ERP Data to Support Audits:

- Data Uses
- Data Access (from ERP Systems, SAP – DND FMAS eg)
- Data Analysis

## DATA USES

Look for specific individual items:

- ← confirm existence or absence
- ← obtain details
- ← identify related items
- ← determine search keys

Summarize & classify data –  
(profiles, patterns & trends):

- ← descriptive information
- ← materiality/risk
- ← invalid (outside range or incompatible)
- ← comparative & time series analysis

Look for a set of items of interest:

- ← anomaly items (Risk Item Detection)
- ← invalid items
- ← sub-populations & samples



## DATA ACCESS METHODS

### On-Line Production System - Standard / Menu Based:

← Documents/Transaction Queries

← Standard Reports

Summaries

Reference Tables

Logs

← Pull-down Lists

### Supplemental / Customized :

← Special Tools

- Commercial Access Applications

(eg. AIS, Report Writer, SQL Direct, etc; 'ACL Direct Link' to SAP)

- In-House Tools

(eg. Financial Hierarchy, Numerical Analysis, Performance Ratios)

← Off-line data (possibly a DataMart)

- Ad Hoc Queries

- Tailored Reports

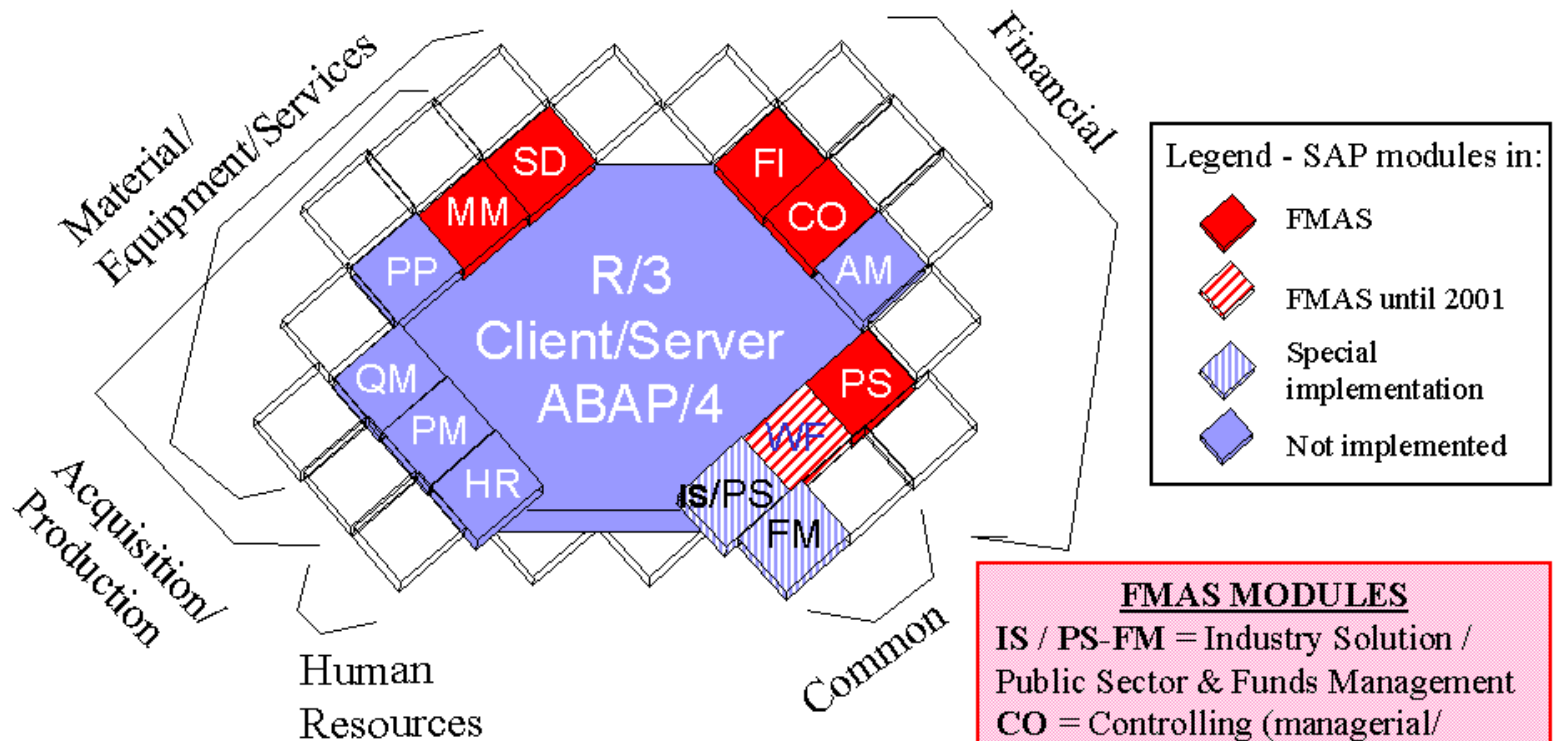
- Reference Tables

- Transaction Detail Files



# Using ERP Data to Support Audits

## FMAS - SAP R/3 System Modules



### FMAS MODULES

IS / PS-FM = Industry Solution / Public Sector & Funds Management  
 CO = Controlling (managerial/ cost centre accounting)  
 PS = Project System  
 FI = Financial Accounting (GL accounting)  
 SD = Sales and Distribution  
 MM = Materials Management  
 WF = Work Flow

# Using ERP Data to Support Audits

FMAS Prod 1998 (99-01)  
Main Menu

The screenshot displays the SAP R/3 Main Menu interface. At the top, a menu bar includes 'Office', 'Purchasing', 'Accounting', 'Information systems', 'System', and 'Help'. Below this is a toolbar with various icons. The main menu area is divided into several sections: 'Office', 'Accounting', 'Information System', 'System', 'FI', 'FM', and 'CO'. Red arrows and boxes highlight specific items: 'Shared folders' in Office, 'Financial accounting' in Accounting, 'General ledger' in FI, 'General report sel.' in Information System, 'Create session' in System, and 'Accounts payable' in FI. A yellow box labeled '#10' is positioned near the Accounting section, and another yellow box labeled '#9' is near the System section. A vertical orange arrow on the left points upwards, and a red arrow points from the top left towards the Office menu.

**Office**

- Inbox
- Shared folders

**Purchasing**

- Purchasing
- Invoice Verification
- Print Requisitions

**FI**

- General ledger
- Accounts receivable
- Cash Receipts
- Accounts payable

**Accounting**

- Financial accounting \*6
- Sales/distribution
- Funds management \*7
- Controlling \*8
- Project management
- Upload
- Cashier Corrections

**Information System**

- Executive Info. System
- Accounting
- Sales/distribution
- Project Info. System
- General report sel.
- System Messages

**System**

- Create session
- End session
- User profile
- Services
- Utilities
- List
- Job status
- Short message
- Status...
- Log off

**FM**

- Basic data
- Operative structures
- Planning
- Budgeting
- Execution
- Project Info. System

**CO**

- Cost elements
- Cost centers
- Orders
- Projects
- Processes
- Product cost acctg
- Profit analysis
- Profit center acctg

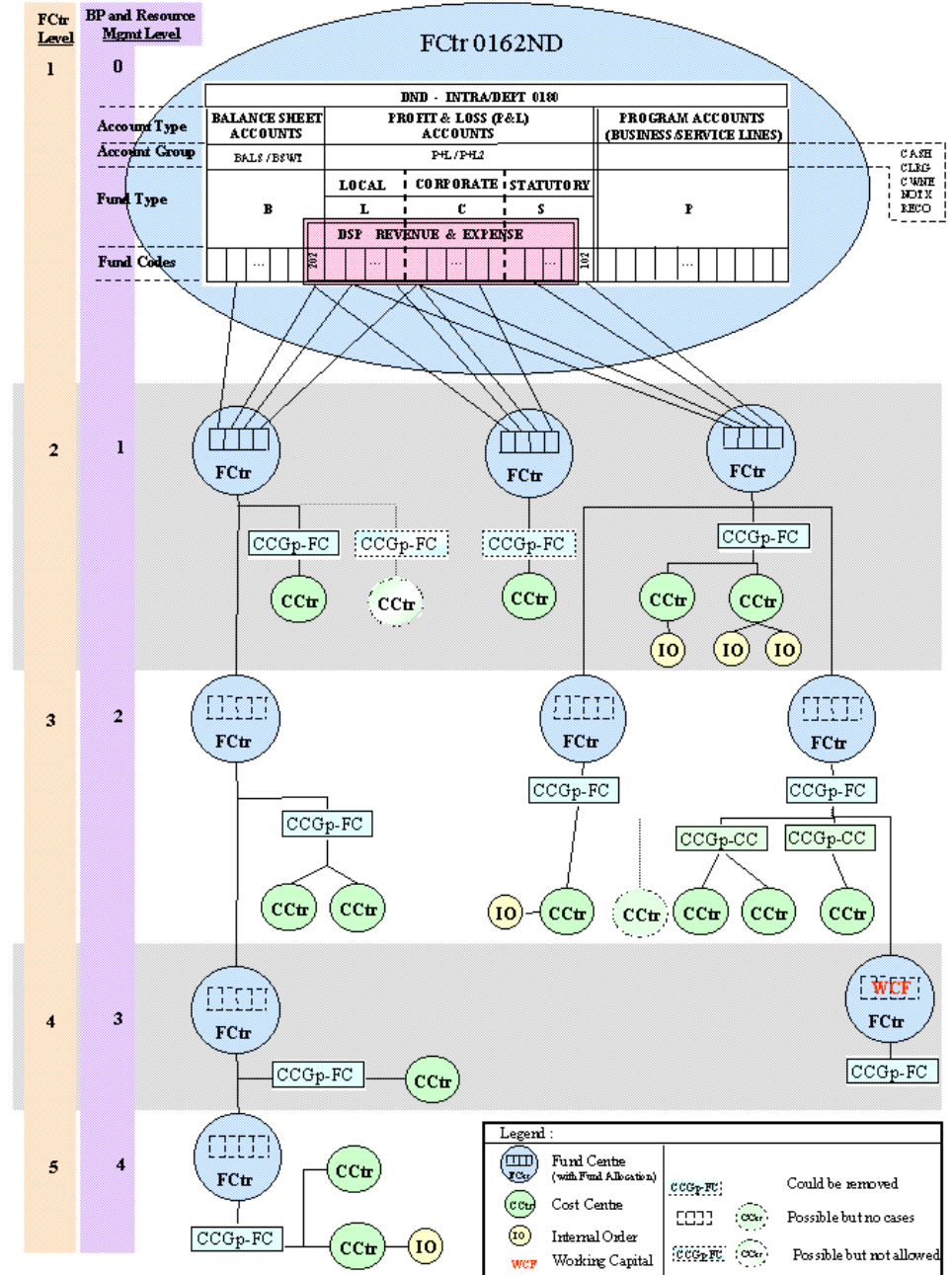
# Using ERP Data to Support Audits

Accountability Centre Codes						FMAS Financial Coding Block <small>(file: FinCodeIllus02.ppt [short] rdm 221700Mar01)</small>
Co.	Fund	GL	FCtr	CCtr	IO	
0180	L101	02106	3610AA	3372AG or 00001574	1114351	
Required User Input (some will default) (some "B" Funds don't use CCtr/WBS)				WBS Elm	Internal Order (IO) - An additional, optional, means of cost identification, or collection	
				Cost Centre (CCtr or CC) - identifies WHO'S USING THE MONEY; the manager & organization/activity accountable for the costs incurred (i.e. using fin resources to achieve a purpose of that activity), or revenue earned	Work Break-down Structure (WBS) Element - used instead of CCtr for costs to be identified by Capital Project	
				CCtr & WBS are referred to as the "Cost Object"		
				Fund Centre (FCtr or FC) - identifies WHO'S MONEY IS USED; the manager & organization/role accountable for the allocated/budgeted Funds		
				General Ledger Account (GL or GLAcct) (Matches the Commitment Item in the CO Module) - identifies WHAT RESOURCE (GOODS OR SERVICES) THE MONEY IS USED ON; generally referred to as the "Object of Expenditure or Revenue", or for non-DSP/non-Budgetary Funds used for other control/reporting functions		
				Fund - identifies the broad PURPOSE/FUNCTION INTENDED for the allocated money. For DSP Funds it shows the Parliamentary Source/Authority (Vote); it also shows the Account type for fin reports; PO&M funds show the general management level (ie Corporate or Local). DND also uses some non-DSP and non-Budgetary funds		
				Company or Department Code (Co. or Dept) - identifies the government department or agency		

# Using ERP Data to Support

Fund,  
Fund Centre (FCtr),  
Cost Centre (CCtr),  
Internal Order (IO),  
Hierarchy Schematic

HierCtrDiag02.ppt rdm 301600Mar00



# Using ERP Data to Support Audits

On-Line Doc Query -  
Invoice Doc &  
Field Identification eg.

The screenshot displays the SAP ERP interface for document processing. It includes a menu bar (Document, Edit, Goto, Extras, Settings, Environment, System) and a toolbar with various icons. The main window is titled 'Display Document: Overview' and shows document details for document number 2103219999, company code 0180, and fiscal year 2001. The document date is 2000/09/19, and the posting date is 2000/10/19. The reference document is CONTINGENCYGRANT. The currency is CAD. The document is a Vendor invoice (Document type KR) with document header text P01 ROBINSON 519-254-4373. The document is an Accounting document (Name BKPF) with object key 210321999901802001 and FPD330. The document was entered by HUSKP01 on 2000/10/20 at 12:08:28. The document is a Vendor invoice (Document type KR) with document header text P01 ROBINSON 519-254-4373. The document is an Accounting document (Name BKPF) with object key 210321999901802001 and FPD330. The document was entered by HUSKP01 on 2000/10/20 at 12:08:28. The document is a Vendor invoice (Document type KR) with document header text P01 ROBINSON 519-254-4373. The document is an Accounting document (Name BKPF) with object key 210321999901802001 and FPD330. The document was entered by HUSKP01 on 2000/10/20 at 12:08:28.

**Display Document: Initial Screen**

List First line item

Keys for Financial Accounting

Document number 2103219999  
Company code 0180  
Fiscal year 2001

**Display Document: Overview**

Choose Document header Taxes Display currency

Document number 2103219999 Company code 0180 Fiscal year 2001  
Document date 2000/09/19 Posting date 2000/10/19 Period 7  
Reference doc. CONTINGENCYGRANT Intercomp.no.  
Currency CAD Texts exist

Items in document currency

Itm	PK	BusA	Acct no.	Description	Tx	Amount in	CAD
001	31		3025520	COMMANDING OFFICER-HMCS HUNTER	IE	1,418.75-	
002	40	0001	12111 *2	V1 RES CNTG ALL/GRNT	IE	1,418.75	

**Display Document: Line Item 002**

Document header More data

G/L account 12111 V1 RESERVES CONTINGENCY ALLOW AND ORGANIZ GR  
Company code 0180 Dept Nat Def/Min Def Nat  
Doc.no. 210

Line Item 2 / Debit entry / 40

Amount 1,418.75 CAD  
Tax code IE  
Tax juris.code CAON

Additional account assignments

Cost center	WBS element	CAC #	Prog Activity	Funds center	Allocation	Text
1328AA			0000	0176AA	1328AA	CONTINGENCY GRANT FY 00/01

**Document Header: 0180 Company Code**

Document type KR Vendor invoice  
Doc.header text P01 ROBINSON 519-254-4373  
Reference doc. CONTINGENCYGRANT Document date 2000/09/19  
Posting date 2000/10/19  
Currency CAD Posting period 07 /  
Name BKPF Accounting document  
Object key 210321999901802001 FPD330  
Entered by HUSKP01 Transaction FBVB  
Entry date 2000/10/20 Time of entry 12:08:28  
Changed on Last update

Continue

Continue ENTER  
Help \*5 F1  
Possible entries F4  
Cancel F12



## Using ERP Data to Support Audits

# Field Identification eg. cont.

Help - Display Document: Overview

Field: Posting date

Posting date in the document

Definition

Date which is used when entering the **document** in Financial Accounting or Controlling.

Use

The **fiscal year** and the period for which an update of the accounts specified in the document or **cost elements** is made, are derived from the posting date.

When entering documents, the system checks whether the posting date entered is allowed by means of the **posting period** permitted.

Note

Extended help Technical info

Technical Information

Screen data	GUI data
Program name	SAPMF05L
Screen number	0700
Status	UEEA

Field data			
Table name	BKPF	Data element	BUDAT
Field name	BUDAT	DE supplement	0

Field description for batch input

Scrn field BKPF - BUDAT |

Navigate

## Using ERP Data to Support Audits

# Pull-Down Lists - G/L Balance Report

The screenshot shows the SAP G/L Account Balances report interface. The main window displays various selection options and dynamic selections. Two pull-down lists are open, showing the selection process for the G/L account and the resulting list of accounts.

**Limit value range for search help N**

G/L account	
Company code	0180
G/L long text	
Language	E
G/L account	

**G/L account**

ChAc	G/L acct	Short text
0180	0	-
0180	877	DEBITS OPEN ACCOUNTS
0180	878	GARNISHEE DEBIT ACCT
0180	888	CREDIT OPEN ACCOUNTS
0180	889	GARNISHEE CREDIT ACT
0180	1029	V1 REC CIV PRS SECND
0180	1049	V1 PERS'L CHRGS OGD
0180	1101	V1 INDET UNDER PSEA
0180	1102	V1 BIL BONUS-LOC CST
0180	1103	V1 RET CIV PAY CURFY
0180	1105	V1 TERM UNDER PSEA
0180	1107	V1 SEV PAY/RET/TERM
0180	1108	V1 SEV PAY - MIL PRS
0180	1110	V1 OVRM ALL CIV EMP
0180	1111	V1 CASUAL NOT PSEA
0180	1113	V1 RET CIV PAY PRVfy
0180	1114	V1 TERM BEN -WFA&CRP
0180	1125	V1 VAC/EMERG ADV SAL
0180	1131	V1 REG F EXC TRM LVE
0180	1133	V1 RES F CLASS 'A'

**Output control**

- ☐ Corporate group version
- ☐ Balances in foreign currency
- Summarization level (0-4) 0
- Subtotal at level
- Subtotal at level
- Subtotal at level
- ☐ Print accounts not posted to
- ☐ Alternative account number
- ☐ List separation requested
- ☐ Print microfiche line
- ☒ Matchcode search was cancelled



# Using ERP Data to Support Audits

## Standard Reports Menu

The screenshot displays the 'Application Tree Report Selection General' window. The menu bar includes: Node, Edit, Goto, Utilities, Clipboard, Settings, System, Help. The toolbar contains various icons for file operations and navigation.

**Application Tree Report Selection General**

Buttons: Set focus, Generate list

**National Defence Report List**

- G Budgeting and Reporting
  - FCtr to CCG to Cctr Mapping
  - Cost Centre Planning Report
  - Plan Variance (PVR)
  - Commitment Details Report
  - PAYE/RAYE Tracking Report
- G Financial Accounting
  - Allocation No vs. Document No
  - G Accounts Payable
  - G Accounts Receivable
  - G General Ledger
  - G Cashier Reports
  - G T4A Reports
  - G Miscellaneous
- G Funds Management
- G Cost Centre Accounting
- G Sales and Distribution
- G Project Systems
- G Salary Management System
- G LACO Reports
- User Information

**Financial Accounting**

- Allocation No vs. Document No
- G Accounts Payable
  - A/P Information System
  - G Account Information
  - G Adequacy and Documentation
    - E Master Data
      - Vendor List
      - Changes
  - G Account
- G Other Evaluations
- G Payment Transactions
- G Accounts Receivable
- G General Ledger
  - G Account Information
  - G Adequacy and Documentation
    - Totals Balances
    - List Of Account Balances
  - G Lists
- G Cashier Reports
- G T4A Reports

Red arrows point from the 'Financial Accounting' section of the 'National Defence Report List' to the 'Financial Accounting' section of the 'Standard Reports Menu'. A red box highlights the 'Adequacy and Documentation' sub-section in both trees. A red box also highlights the 'Accounts Payable' sub-section in the 'Standard Reports Menu'.

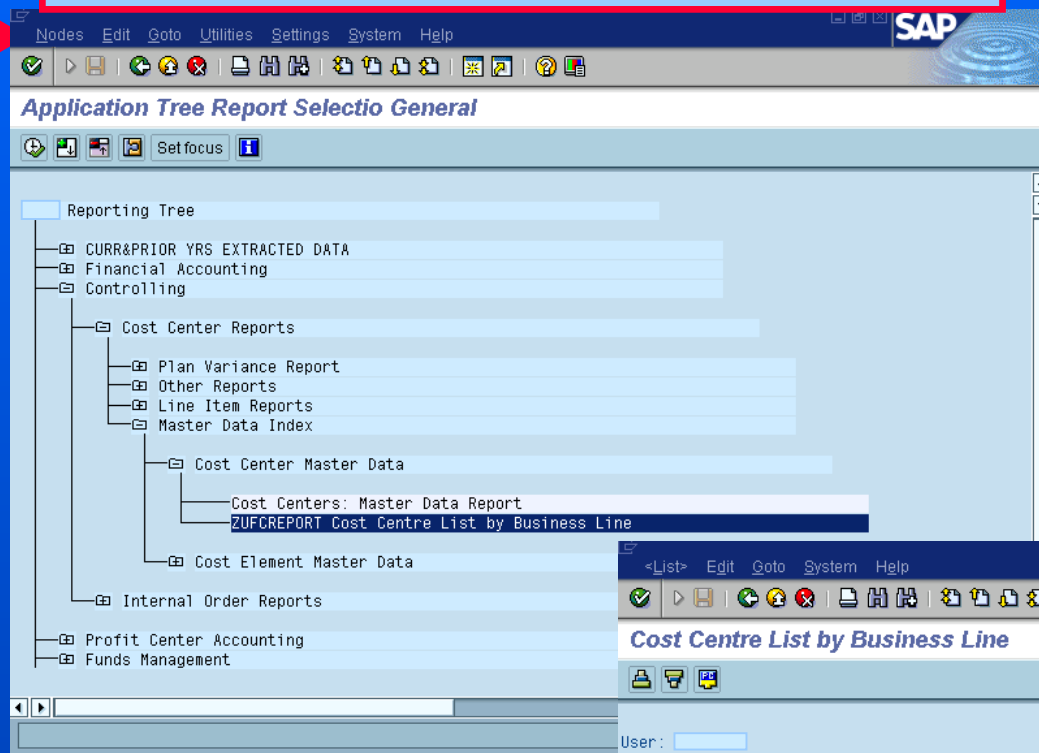
## Using ERP Data to Support Audits

# On-Line Reports - FCtr Hierarchy

Fund Centre to Cost Centre to Internal Order Mapping		
001 FC:	0162ND	DND CF
002 FC:	0158AA	CHIEF OF DEFENCE STAFF (CC8C3)
CCG:	0158AA-FCG	CHIEF OF DEFENCE STAFF (CC8C3)
CC:	0158AA	CHIEF OF DEFENCE STAFF (CC8C3)
002 FC:	0161AA	CC8F CHIEF PUBLIC AFFAIRS
CCG:	0161AA-FCG	CC8F CHIEF PUBLIC AFFAIRS
CC:	0161AA	CC8F CHIEF PUBLIC AFFAIRS
IO:	2500040	PAYE
IO:	2500060	Sabourin, Paul
IO:	2500080 (C) (D)	Daniel Lemieux
IO:	2500081 (D)	Photo Equipment - DGPA
IO:	2500082 (D)	Tom Ianella
IO:	2500083	Media Monitoring Services
IO:	2500100	Office Supplies
IO:	2500120 (D)	Translation Services - DGPA
IO:	2500121 (D)	David Sherwin
IO:	2500122	Courier Services
IO:	2500141	DGPA
IO:	2500180	Printing - DGPA
IO:	2500201	Regional Offices
IO:	2500220	Acquisition Card - E. Gaudet
IO:	2500240	DGPA Training Officer
IO:	2500241	Minor Travel/ Petty Cash
IO:	2500269	Outreach
IO:	2500285	Ministerial Services
IO:	2500300	SWE - Research and Analysis

# Using ERP Data to Support Audits

## On-Line Reports - Hierarchy – RCMP



<List> Edit Goto System Help

**Cost Centre List by Business Line**

Cost Centre List by Business  
Program: ZUFCREPORT

User:   
Client / System: 110 / PR3  
Total records retrieved: 10,821

Selection criteria used:  
Company Code:   
Controlling Area:

Cost Ctr	Cost Center Name	Area/Group	F	BL	Sv	SS	Fct	Fund Center	Parent FC	Profit Ctr
A0000	DIVISION WAREHOUSE	A99999999	A	4	02	62	34	A0000	A0015	AA001
A0002	AUDITION	AF01AMBCD	F	1	01	01	22	A1415	A0001	A0002
A0003	STORES-COST OF SALES	A99999999	A	4	02	62	34	A0000	A0015	AA001
A0004	CONF OF FIRST (BLKD)	A99899999	F	6	05	78	82	A1902	A0001	66666
A0005	OLE INVESTIGATN	AF01AHBCD	F	1	01	01	01	A1415	A0001	A0002
A0006	NBCRT	AF01AKBCD	F	1	01	01	22	A1415	A0001	A0002
A0007	PIPE BAND	AI01ABBCD	A	4	03	51	35	A0007	A0015	AA001

## Using ERP Data to Support Audits

Downloading -  
Vendor Report Detail eg.

**Display Vendor Line Items: Basic List**

0001201477 / 0180  
ACME SUPPLIES LTD  
V8T 4P4 VICTORIA

Line items 1177

Allocation	Doc.no.	DT	Doc.date						
	2103699952	KR	01/03/15						
	2103718541	KR	01/03/16	31		CAD	2,682.49-		ACME C646 R01
	2103748109	KR	01/03/27	31		CAD	44.43-		ADMIN 0 (250) 339-8215
0103B010301K001456	2103716231	KR	01/03/20	31		CAD	131.10-		W0103-200160340,250-363-
0103B010301K001457	2103716232	KR	01/03/20	31		CAD	953.78-		W0103-200160350,250-363-
0103B010301K001458	2103716233	KR	01/03/20	31		CAD	19.26-		W0103-200160355,250-363-
0103B010301K001521	2103733960	KR	01/03/22	31		CAD	153.21-		W0103-200160348,
0103B010301K001590	2103741735	KR	01/03/26	31		CAD	38.78-		W0103-2001BA0986, (250)

**Cleared items**

	0000011372	KZ	98/05/11	25		CAD	184.25	372	
	2100019241	KR	98/04/16	31		CAD	51.36-	372	
	2100028925	KR	98/04/14	31		CAD	132.89-	372	LPO 8T012
						CAD	139.61	199	
						CAD	139.61-	199	
						CAD	24.40	388	

**Save list in file...**

In which format should the list be saved ?

☒ Unconverted  
☐ Spreadsheet  
☐ Rich text format

Continue Cancel

**Transfer List to a Local File**

File name

OK X

## Using ERP Data to Support Audits

## OneTime Reports – Posted for General Access

Document Edit Goto Extras Settings Folders System Help

CFMR 018 Trial/Vérif CF018200404

PROGRAM/PROGRAMME: ZUCFMR00 NATIONAL DEFENCE  
 SYSTEM/SYSTEME: FEP RGI / FIS  
 CLIENT: 942 CFMRS Reporting / Rapport du SCGRF  
 DEP'T./MINISTÈRE: 018 CFMRS Trial Balances / Balances de vérification du SCGRF

Table/Table ZCFM0T Summary table  
 Department/Ministère 018 National Defence  
 Ledger/Grand livre Z2 roll-up ledger for ZCFM0T  
 Fiscal Period/Période financière 2004/04

Group Account	Vote	Activity	Object		I	Opening	DR
Account	Auth.	Code	Code	Description	E	Balance	CR
Compte de groupe	Aut.	Code	Code		I	Solde	DT
Compte	crédit	d'act.	d'article	Description	E	d'ouverture	DT
Current Assets(11000-15999)							
11123 Deposits in transit	0000	00000	0000 -		E	890,172.30	DR
	R300	00000	5299 Net increase or decr		E	0.00	DR
Total: 11123						890,172.30	DR
11132 Imprest accounts ch	0000	00000	0000 -		E	7,702.46	CR
Total: 11132						7,702.46	CR

Start

Tue, 12 Aug 2003 17:56:43

## **Data Analysis – Aimed at ...**


### **Risk Detection Methods – Waste/Misuse/Fraud**

#### **Known Symptoms -**

- ▶ Multiples (duplicates)
- ▶ Incompatible data
- ▶ Incomplete or missing data
- ▶ Never used
- ▶ Excessive fluctuations
- ▶ Extremes & Unlikelies

#### **Unknown Symptoms -**

- ▶ Patterns in the data:
  - Data Profiling
  - Ratio Analysis
  - Benford's Law
- ▶ Modeling



Data Analysis – Illustrations

Data Analysis – Illustrations



## **Data Analysis – Aimed at ...**

### **Risk Detection Methods – Waste/Misuse/Fraud**

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ACL for Windows 6.5

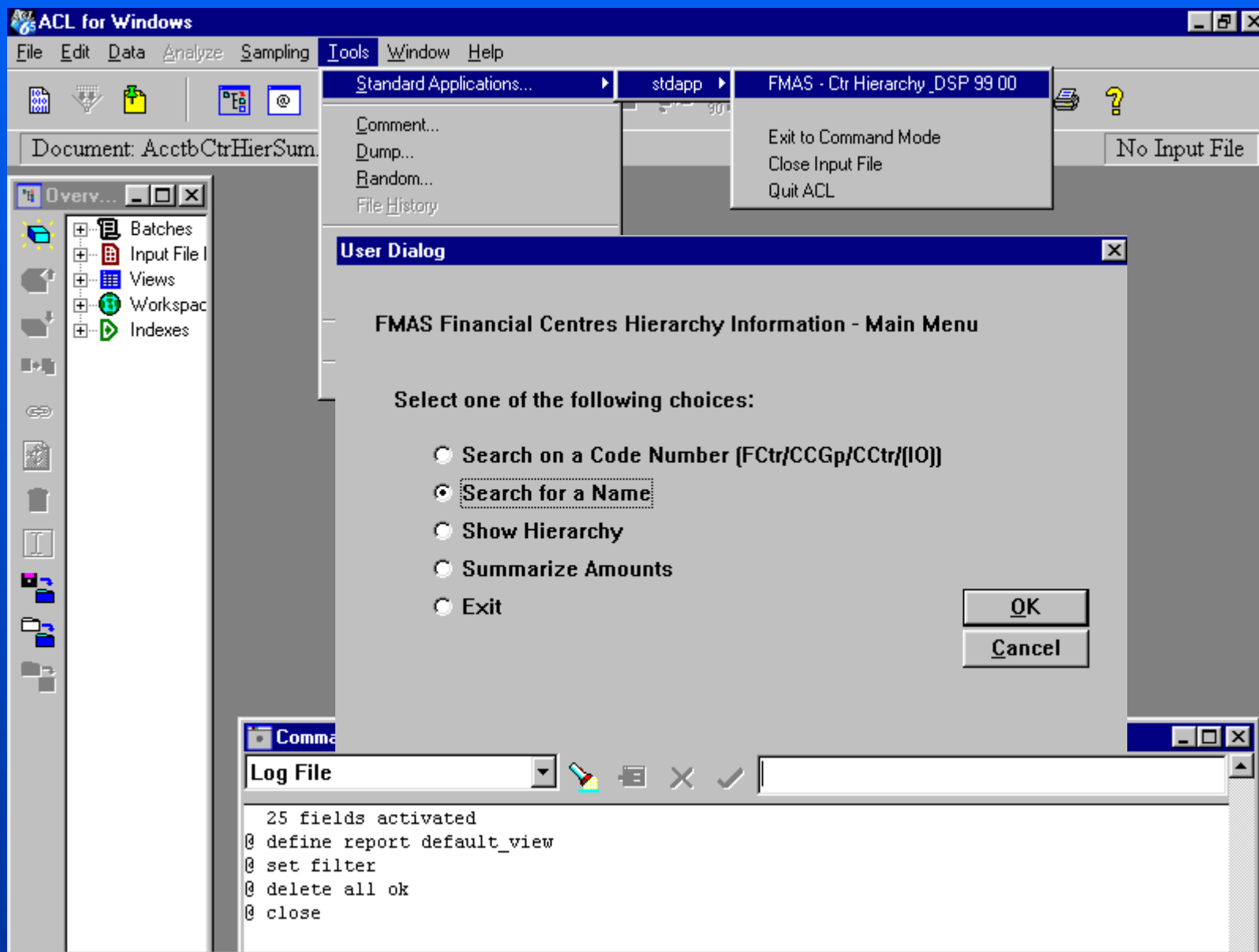
Document: ISACA.ACL Global Filter: Invoices : 7/13,507 Input File: FMAS\_Extract

View: Default\_View [Data File: Fmas\_00.fil]

Invoices

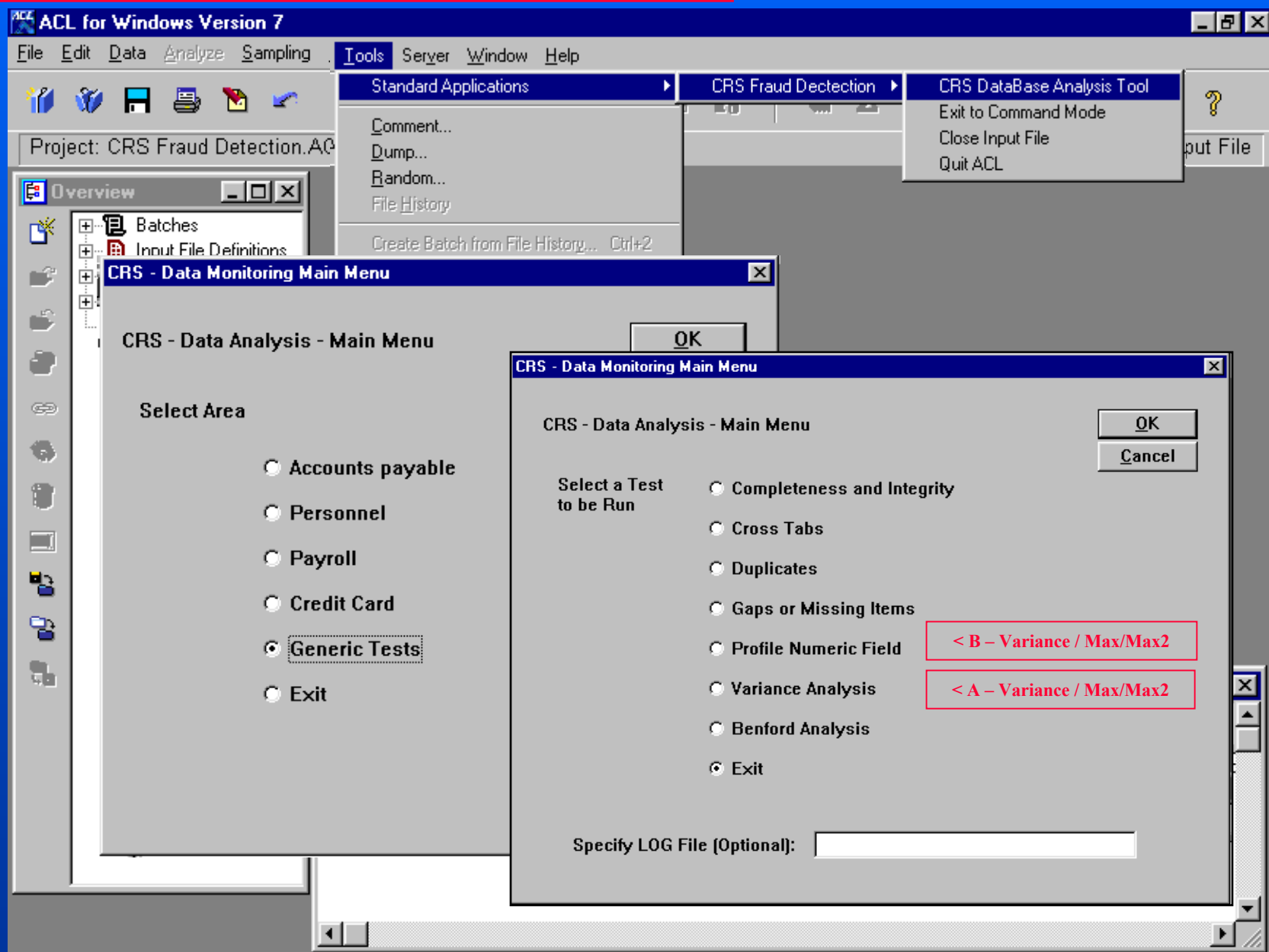
	Doc No	Line No	Doc Type	FY	PK	D	Amount	Doc Amt	GL	Fund	Fund Centre	C
1	2102346802	002	KR	2000	40	S	\$381.00	\$381.00	07304	L101	0106AA	0.
2	2101344841	002	KR	2000	40	S	\$38.10	\$38.10	07211	L101	0127AA	3.
3	2101508324	002	KR	2000	40	S	\$381.01	\$381.01	07208	L101	0168AA	0.
4	2102544171	002	KR	2000	40	S	\$38.13	\$38.13	07239	L101	1708AA	1.
1173	2101242556	002	KR	2000	40	S	\$56.97	\$56.97	07201	L101	0105AA	0.
1175	2101268090	002	KR	2000	40	S	\$150.38	\$150.38	07201	L101	0105AA	0.
1176	2101273218	002	KR	2000	40	S	\$6.50	\$6.50	02304	L101	0105AA	1.
1177	2101281698	003	KR	2000	40	S	\$1,474.86	\$1,474.86	02301	L101	0105AA	0.
1179	2101298697	002	KR	2000	40	S	\$41.60	\$41.60	07207	L101	0105AA	0.
1180	2101303532	002	KR	2000	40	S	\$22.50	\$22.50	04601	L101	0105AA	1.
1182	2101307337	002	KR	2000	40	S	\$1,506.75	\$1,506.75	07202	L101	0105AA	0.
1183	2101309970	002	KR	2000	40	S	\$393.23	\$393.23	07202	L101	0105AA	0.
1184	2101316873	002	KR	2000	40	S	\$177.39	\$177.39	07208	L101	0105AA	0.
1185	2101323527	002	KR	2000	40	S	\$123.90	\$123.90	07239	L101	0105AA	0.
1187	2101329999	002	KR	2000	40	S	\$12.55	\$12.55	02208	L101	0105AA	0.
1188	2101338845	002	KR	2000	40	S	\$204.10	\$204.10	07201	L101	0105AA	0.
1189	2101340197	002	KR	2000	40	S	\$302.25	\$302.25	07201	L101	0105AA	0.
1191	2101346656	002	KR	2000	40	S	\$329.40	\$329.40	07210	L101	0105AA	4.
1192	2101351301	002	KR	2000	40	S	\$109.00	\$109.00	02304	L101	0105AA	0.
1193	2101354782	002	KR	2000	40	S	\$1,492.50	\$1,492.50	04607	L101	0105AA	0.
1194	2101356802	002	KR	2000	40	S	\$100.62	\$100.62	07103	L101	0105AA	0.
1195	2101362091	002	KR	2000	40	S	\$376.12	\$376.12	07201	L101	0105AA	0.
1196	2101364330	003	KR	2000	40	S	\$50.99	\$50.99	07201	L101	0105AA	0.
1198	2101371711	003	KR	2000	40	S	\$454.55	\$454.55	07201	L101	0105AA	0.

Start | Inbox - Microsoft Outlook | Windows Commander 4.51... | Microsoft PowerPoint - [ER... | ACL for Windows 6.5 | Tue, 03 Apr 2001 16:39



## Data Analysis – Illustrations

## Data Pattern Analysis with CRS DataBase Analysis Tool



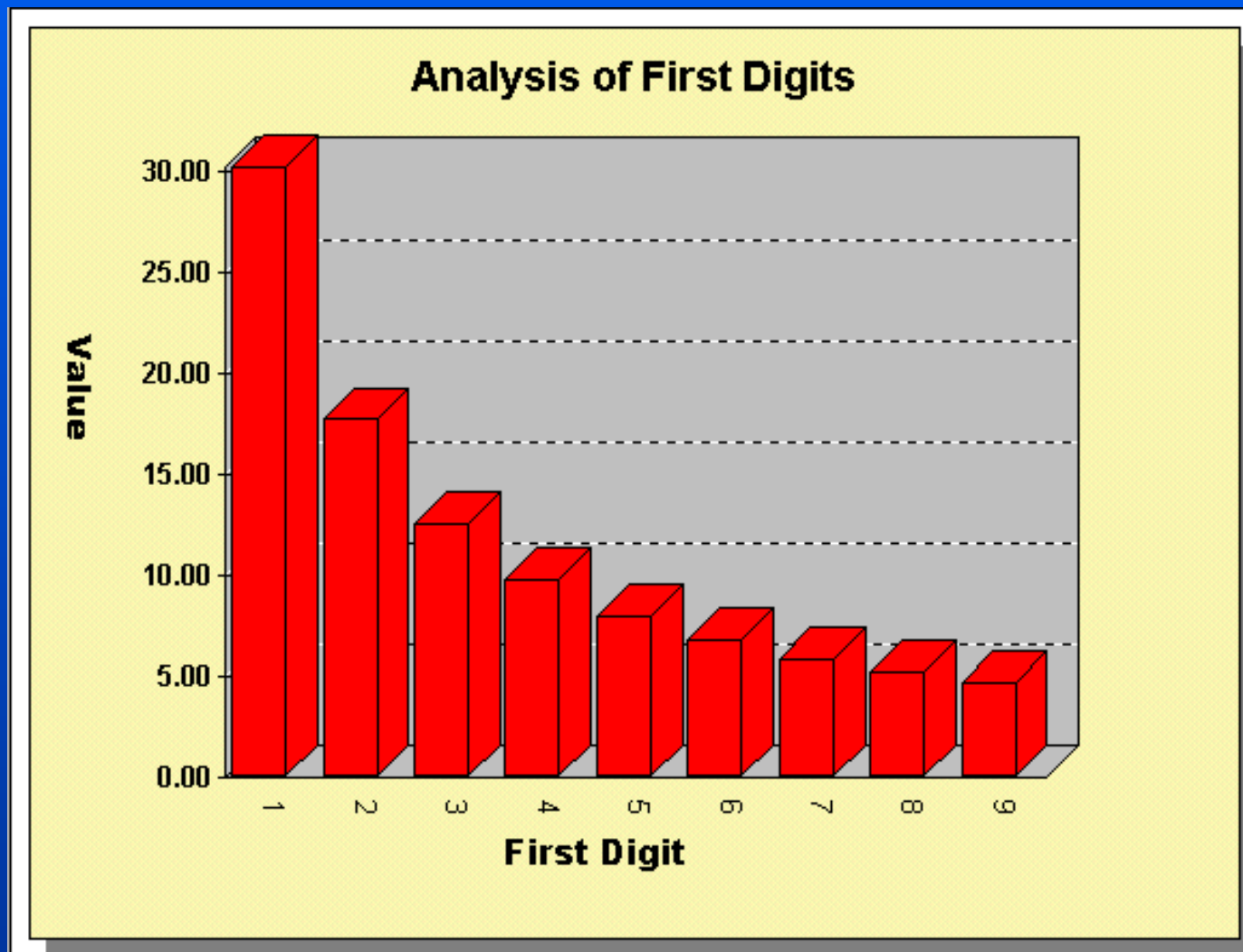
## RATIO ANALYSIS

## Variance in Payments - by Vendor

Vendor	Total	Max	Max2	Max_max2	Min	Ctr
VID	56,329.18	50,770.59	12,00.00	42.31	20.25	20
KUBOTA LTD	15,832.09	14,200.00	379.33	37.43	1.55	18
	43,678.04	39,085.18	1,519.82	25.72	1.50	21
ECIRONCS	1,541,778.46	1,250,000.00	52,724.33	23.71	72.97	61
IRIES INC	216,499.15	198,696.99	3,425.00	58.01	25.00	39
	29,143.53	17,774.24	229.44	77.47	0.53	327
L INSTRUMENTS	146,283.11	114,487.50	5,554.75	20.61	6.31	28
ING SERVICES	75,693.81	31,512.00	987.55	31.91	3.68	500
CTION & SON	10,257.49	9,282.69	238.56	38.91	14.08	12
N CO INC	160,713.70	137,600.00	4,250.00	32.38	74.00	30
CTIONS	2,341,965.71	2,247,685.59	21,020.16	106.93	17.50	27

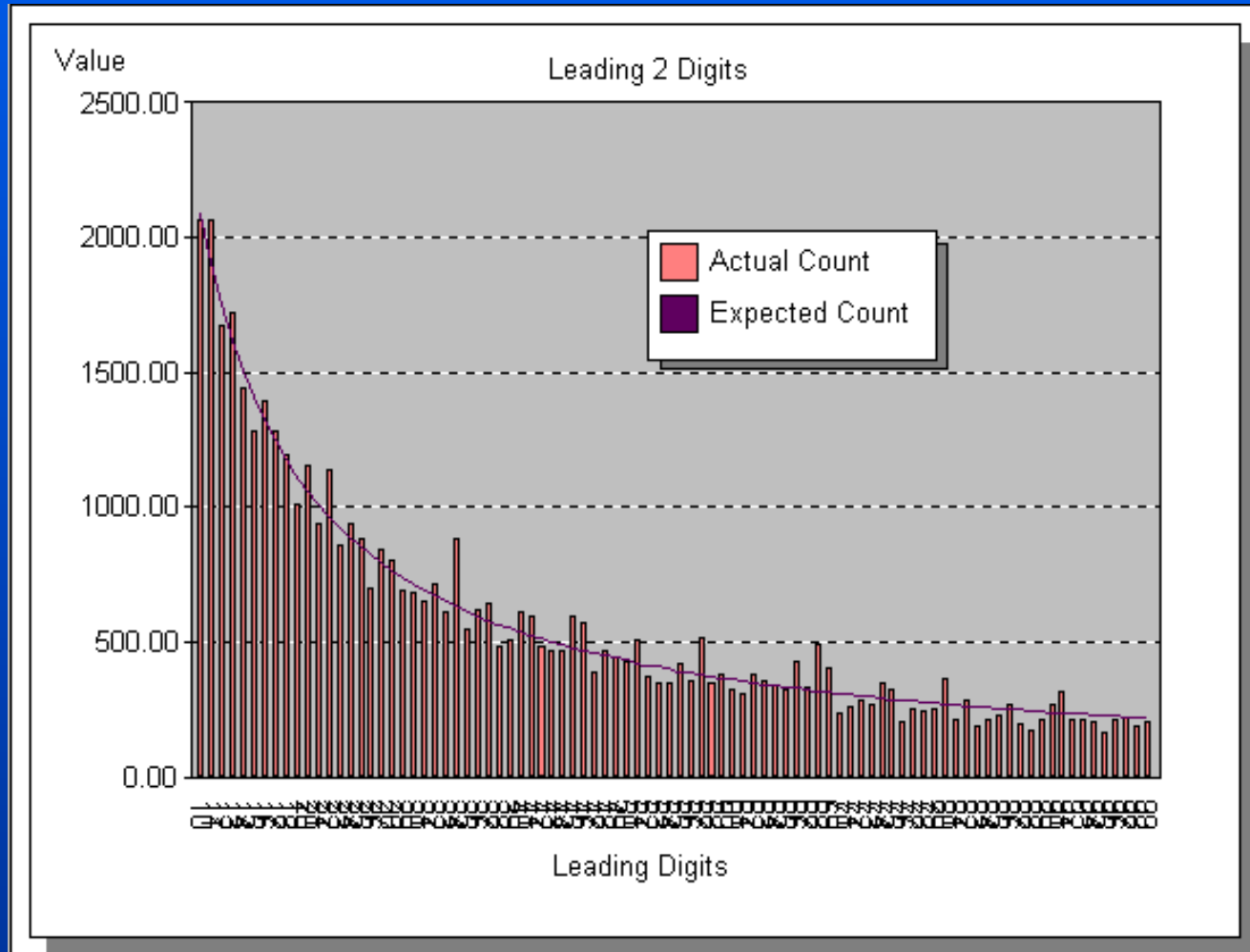
## BENFORD'S LAW ANALYSIS

### Benford's Law Concept



## BENFOD'S LAW ANALYSIS

### Benford's Law – Illustration (Leading 2 Digits)



## **Data Analysis – Aimed at ...**

### **Risk Detection Methods – Waste/Misuse/Fraud**

#### **Known Symptoms -**

- ▶ Multiples (duplicates)
- ▶ Incompatible data
- ▶ Incomplete or missing data
- ▶ Never used
- ▶ Excessive fluctuations
- ▶ Extremes & Unlikelies

#### **Unknown Symptoms -**

- ▶ Patterns in the data:
  - Data Profiling
  - Ratio Analysis
  - Benford's Law
- ▶ Modeling

## Tests to Identify KNOWN Fraud Indicators

### Duplicate Payments

Same / Same / Different

ie. matching Invoice # & Amount –

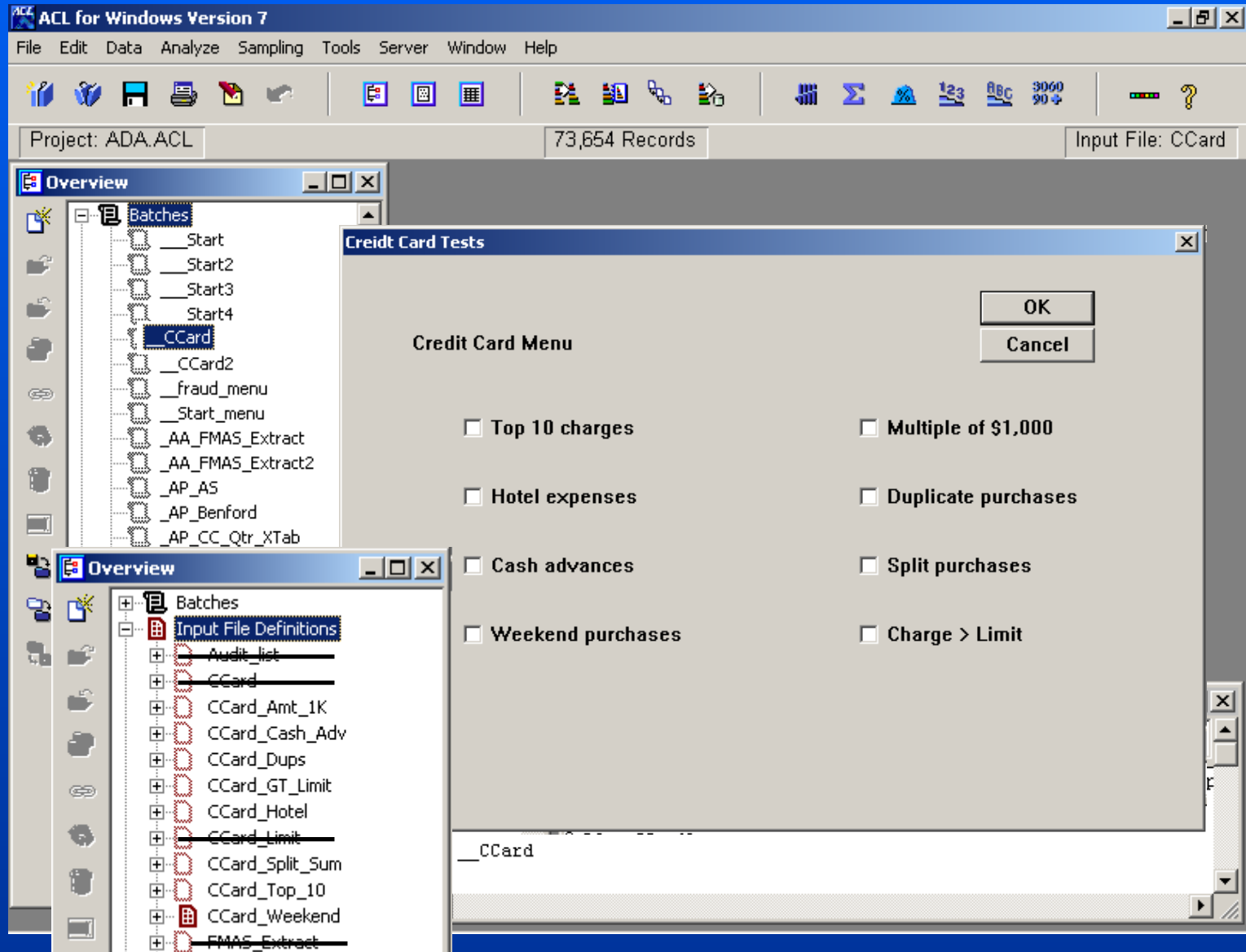
but not Vendor Number

- ← Higher Risk of being a Duplicate
- ← Not Identified by the Financial System
- ← FY 00/01
  - ← 48 transactions \$ 821,091.75 - all duplicates
  - ← 2 Unknown \$ 17,849.95
  - ← 3 Recovery Pending \$ 56,225.67



## Data Analysis – Illustrations

# Known Symptoms - CRS DataBase Analysis Tool for Credit Card Data



## Tests to Identify KNOWN Fraud Indicators

### Purchasing - Examples

Computerized search of the vendor list and look for:

- Same address or phone#, but different Vendor Name & #
- Different spellings of same Vendor Name
- No Phone #

## Tests to Identify KNOWN Fraud Indicators

### Purchasing:

#### - Fluctuations -

- ← Rapidly increasing, or inconsistent Unit Prices
- ← Unit Prices for same items inconsistent among different vendors
- ← Inventory level fluctuations inconsistent with production or sales

#### - Unlikely -

- ← Matches of item numbers/description being purchased and sold for scrap



Continuous Monitoring

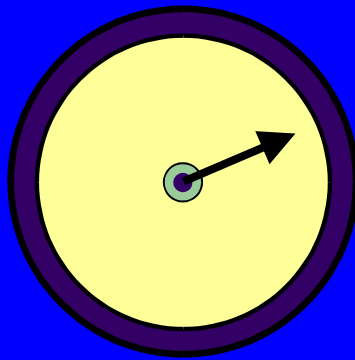
Continuous Monitoring

Continuous Monitoring

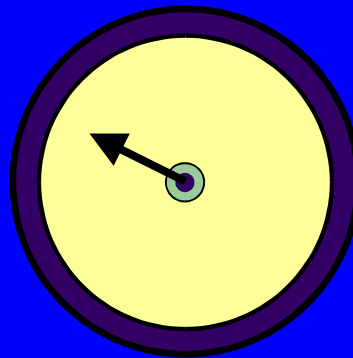
Data Pattern Analysis with  
CRS DataBase Analysis Tool

Performance Measures

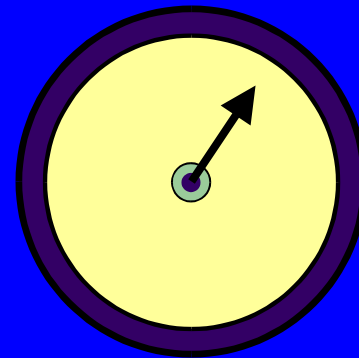
# Financial Management Dashboard



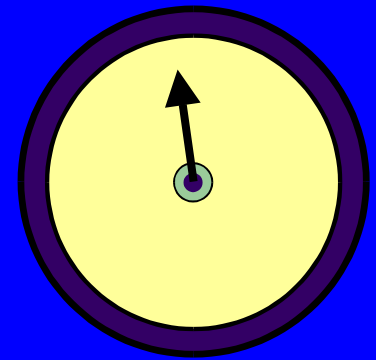
Efficiency



Compliance



Accuracy &  
Completeness



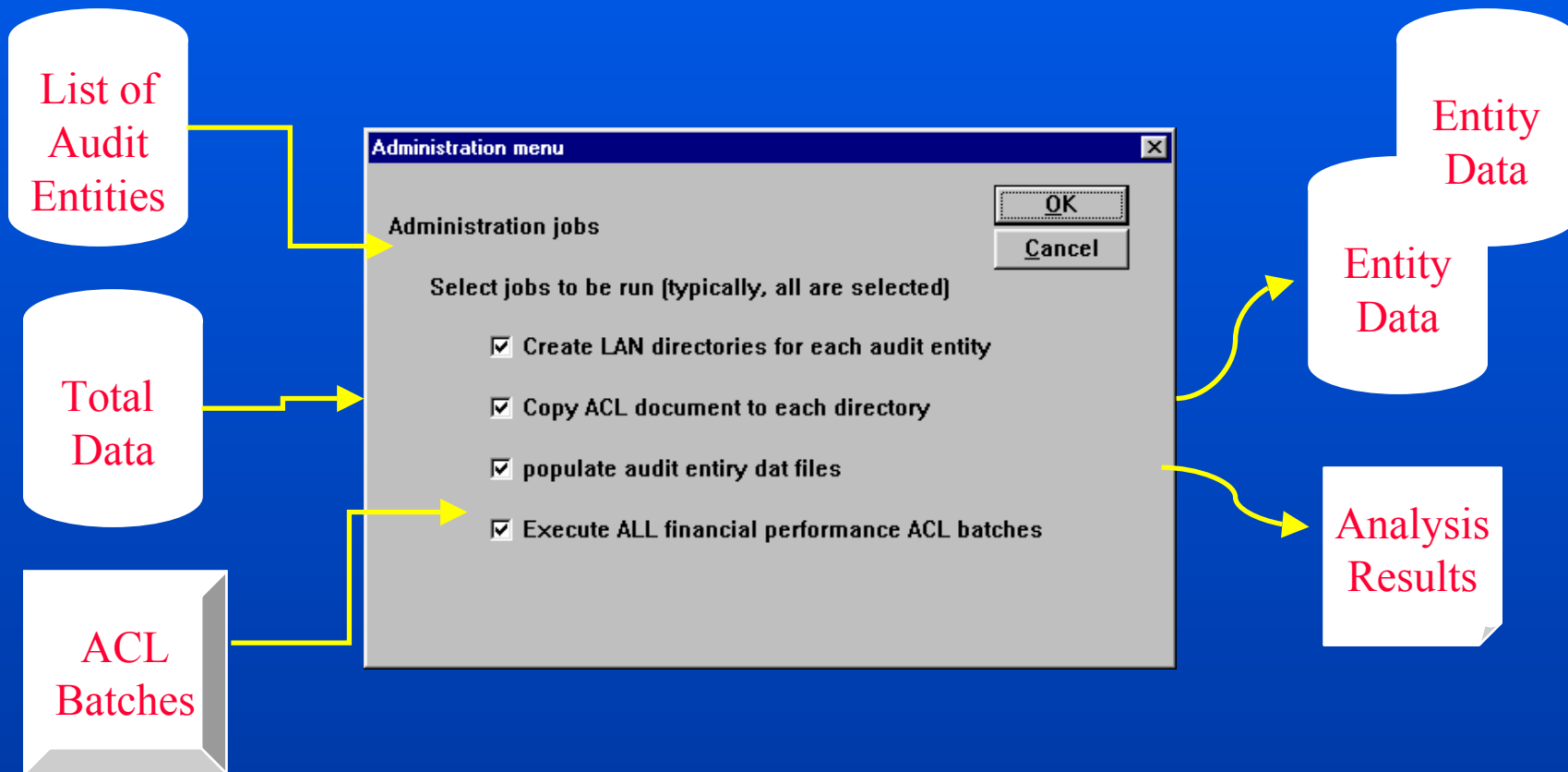
Management

## Continuous Monitoring

# Data Pattern Analysis with CRS DataBase Analysis Tool

## Performance Measures

### Financial Management



# Continuous Monitoring

## Data Pattern Analysis with CRS DataBase Analysis Tool

### Performance Measures

Microsoft Excel - Results010203_Sum.XLS																		
File Edit View Insert Format Tools Data Window Help																		
A23																		
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	FY 01/02/03	Fctr	Fctr Desc		LATE				< \$5 K				FY				PROF	
2				FY 01	FY 02	FY 03		FY 01	FY 02	FY 03		FY 01	FY 02	FY 03		FY 01	FY 02	FY 03
3	3371AA	CHIEF MARITIME STAFF																
4																		
5		0097AA	J 00 COMMAND	1.23	0.00	4.88		87.48	82.00	88.98		0.00	0.00	0.00		0.00	0.00	0.00
6		0097AB	J 02 CHIEF OF STAFF	4.65	7.50	3.01		76.60	85.06	90.29		0.02	0.01	0.05		0.15	0.04	0.00
7		0100AA	N4 A COS MAT	1.38	1.54	2.11		21.76	63.94	68.36		0.01	0.03	0.90		0.02	0.04	0.00
8		0103AA	CFB ESQUIMAL COMMAND	4.81	2.92	1.07		60.99	78.93	82.37		0.66	0.64	0.50		0.00	0.03	0.00
9		0139AA	CFS ST JOHN'S	4.54	0.62	0.00		2.19	15.01	18.57		0.00	0.01	0.00		0.00	0.00	0.00
10		0176AA	NAVRESHQ	7.25	8.18	5.42		27.06	38.61	41.04		0.26	0.23	2.29		0.81	0.42	0.00
11		0493AA	VENTURE NOTC COMMAND	5.91	11.63	1.94		89.33	78.74	81.15		0.00	0.95	0.03		0.00	0.00	0.00
12		1347AA	COMD-CFSS ESQUIMALT	6.31	6.13	3.60		93.66	92.42	95.29		0.00	0.07	1.82		0.00	0.00	0.00
13		2698AA	CFMWC HALIFAX	3.73	3.07	9.56		64.90	38.96	41.34		0.02	0.00	3.68		0.00	0.00	0.00
14		3078AB	N7 A COS FRM	14.00	7.61	N/A		91.43	22.02	N/A		0.00	0.00	N/A		1.55	0.04	N/A
15		3078BR	N3 ACOS P&O	3.71	3.61	5.90		21.43	38.45	41.94		0.04	0.13	6.14		0.38	(0.02)	0.20
16		3078GA	MARLANT NO2	2.38	2.14	1.12		60.25	56.12	60.82		0.00	0.09	3.38		0.00	3.32	0.00
17		3371A2	CMS HQ	4.70	1.09	N/A		43.79	48.10	N/A		0.04	0.02	N/A		0.00	0.00	N/A
18		3371AA	CHIEF MAR STAFF	N/A	6.06	5.79		N/A	0.20	38.57		N/A	0.00	0.02		N/A	83.57	96.10
19		3371AB	DGNP	N/A	5.19	1.31		N/A	18.09	18.89		N/A	0.17	0.19		N/A	0.17	0.10
20		3371AM	DGMDO	N/A	2.11	2.73		N/A	5.32	6.15		N/A	0.13	0.02		N/A	0.11	0.00
21		3371BY	MS COMPT	N/A	0.87	0.59		N/A	8.16	15.58		N/A	0.00	0.01		N/A	0.00	0.00
22		3371CA	ACMS	N/A	6.30	8.52		N/A	3.36	8.85		N/A	0.60	2.06		N/A	0.00	0.00
23		3554AA	FMF CAPE SCOTT	3.85	2.49	1.50		10.94	58.50	61.69		0.00	0.10	0.81		0.00	0.01	0.00
24		3555AA	COMD-FMF CAPE BRETON	2.00	2.16	2.24		33.62	81.78	85.90		0.74	0.03	0.00		0.00	0.00	0.00
25		4875AA	N12 F ADMIN	3.61	2.88	1.34		32.24	20.68	35.48		0.40	7.11	0.77		3.25	0.76	1.70
26		4878AA	COMD-CDN FLEET PACIF	6.44	4.92	2.08		75.69	87.14	88.93		1.10	0.03	0.44		41.10	4.56	59.80
27																		
28	3373A1	CHIEF AIR STAFF																
29																		
30		0102A1	14 WING FUND CENTRE	0.88	1.04	1.30		0.69	11.85	12.42		0.08	0.08	0.26		2.48	1.96	7.40
31		0117A1	17 WING FUND CENTRE	1.72	1.52	1.51		62.81	64.80	63.49		0.28	0.17	1.21		2.31	6.38	3.00
32		0121A1	15 WING FUND CENTRE	1.75	1.50	1.65		0.62	30.62	25.25		0.05	0.01	0.01		0.46	(1.89)	1.50
33		0125A1	8 WING FUND CENTRE	1.01	0.86	0.52		0.96	13.21	12.97		0.00	0.01	0.33		0.36	0.05	0.20
34		0133A1	19 WING FUND CENTRE	0.30	0.59	0.88		46.08	46.27	53.68		0.00	0.00	0.03		1.53	1.10	0.50
35		0134A1	4 WING FUND CENTRE	1.15	0.95	0.53		0.44	44.53	46.69		0.03	0.01	0.09		0.41	0.12	0.10
36		0135A1	22 Wing Fund Centre	0.14	0.22	0.46		8.80	23.82	16.63		0.01	0.00	0.17		15.51	2.58	3.60
37		0138A1	3 WING FUND CENTRE	0.51	1.33	1.67		13.66	7.27	4.83		0.05	0.06	0.63		16.76	13.25	7.60
38		0213A1	9 WING FUND CENTRE	0.99	1.31	1.66		11.24	3.82	5.15		0.03	0.11	0.04		0.00	0.00	0.00
39		3373AD	Asst CAS FUND CENTRE	1.34	2.27	1.73		31.26	21.80	32.61		0.04	0.00	2.31		0.00	0.11	0.00
40		3391A1	16 WING Fund Centre	2.05	2.93	5.44		41.35	26.13	38.77		0.01	0.04	1.51		0.01	0.39	0.80
41		3395A1	12 WING FUND CENTRE	5.15	3.95	5.15		58.28	43.66	48.98		0.03	0.01	0.12		0.12	0.00	0.00
Results_01_02_03 / Results_01_02_03_Sum / Summary																		



Conclusion

Conclusion



## **... Of Electronic Data Analysis :**

- ✓ Time savings
- ✓ Monitoring - based on your Assessment of the Risks
- ✓ Review 100% of transactions
- ✓ Pro-active review of transactions
- ✓ Reduce Overall Risk
- ✓ Contribute to Assurance / Letter of Attestation

## **... Automated Tools :**

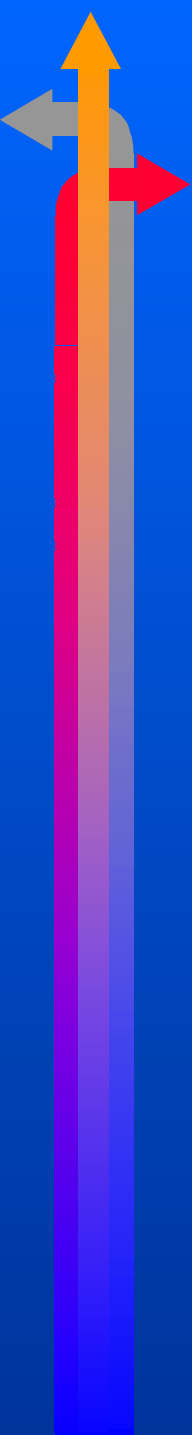
- ✓ Require little user knowledge of analysis techniques
- ✓ Find both known & unknown symptoms
- ✓ Focus attention on just questionable items



**Thank you for your interest.**

**Any Questions**





# Supplemental Slides – Covering additional methods for detecting known problems.

## Tests to Identify KNOWN Fraud Indicators

### Purchasing:

“Perform a computerized match of the vendor list with a list of employees and look for matches of addresses or phone numbers”

← Combining information from SAP (Finance) and PeopleSoft (HR)

## Tests to Identify KNOWN Fraud Indicators

### Purchasing:

- ← Rapidly increasing, or inconsistent Unit Prices
- ← Unit Prices for same items inconsistent among different vendors
- ← Matches of item numbers/description being purchased and sold for scrap
- ← Inventory level fluctuations inconsistent with production or sales

## Tests to Identify KNOWN Fraud Indicators

### Payroll:

- ← Received a Check, but ...
  - ← no valid SIN or Direct Deposit
  - ← no time, attendance or leave
  - ← not in employee directory
  - ← no, or scarce, personnel data
  - ← on list of terminated employee
  - ← no pension or other deductions

## Tests to Identify KNOWN Fraud Indicators

### Questionable Invoices:

- ← Invoices without a valid Purchase Order Number
- ← Invoices from Vendors not in Vendor File
- ← Invoices for more than Purchase Order Amount
- ← Multiple Invoices for Same Item Description
- ← Vendors with Different Invoice Sequences
- ← Invoice for Quantity greater than Quantity Received
- ← Duplicate Invoice Numbers / Date and Amount